

Rochester DX Association



**Next Zoom meeting:
March 16 2021.**

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**DON'T MISS OUR
SPECIAL BACK COVER!**

**Deadline for next issue:
May 31. 2021**

President's Letter

Hello all, getting lighter out every day, warmer and spring (should) be just around the corner.

The "contest season" has almost concluded with very few remaining, I hope you had the opportunity to participate in several.

Bands were less than cooperative, I hope all the propagation predictions are true and we'll soon forget the last few years. Probably not a bad time to begin to think about those "summer time" projects (as I have) so you'll be ready for those SFI numbers in the 100s.

I, as you I'm sure, are all looking to the time we can meet "in person" again, convene "happy hours" and may even hold a normal Field Day. Unfortunately, that may not be for several more months. It's been a long haul, I hope we're nearing the end of all this.

Big thanks need to go out to the RDXA Board as we've been able to maintain our meeting schedule and provide interesting content. Our membership has been retained and John (AC2RL) has continued to publish a superb bulletin (with your content of course). Not an easy task in any area mentioned.

During our last monthly (Zoom) meeting, I mentioned I've been asked (and accepted) the Chairmanship of the DXAC (ed: the ARRL DX Advisory Committee). I've been the Atlantic Division Representative for years and with the departure of several of our

most recent chairman (mainly, due to medical concerns), I've taken on that role.

The DXAC is an interesting proposition; "tasks" are assigned to the group for solicitation of comment, personal thoughts and once collected, turned over to the ARRL Board and PSC (Public Service Commission) for final consideration.

Sometimes those recommendations are approved, sometimes not... I'm sure you've all questioned "rock piles" in the middle of the ocean counting as countries, etc.

One thing that gets constantly misinterpreted, the DXAC is an ADVISORY Committee only; the final determination is not ours. Even as a representative only, some less than conciliatory comments have been sent my way. I guess just like the obnoxious parent on the sidelines of his kid's baseball game, some folks are "totally invested" in their past times.

On the home front and with social activities so limited, I've begun a total redesign of my shack. For years, I've purchased improvements that have generally been resigned to reside on the floor, in its original box. Looking at some of the "years old" sales receipts, I remember when and why I bought it, just never got it hooked up! □

Being involved in several organizations, I've found awards I received in the 200X years, still in whatever container, brought to the shack when the award ceremony was over and taking their place with other undisplayed items.

Well, the last several months have solved that problem, everything is up and other than some antenna switch work (multiple rigs and antennas could be swapped), things are in far better shape. As I mentioned, a lot of this stuff was in the shack, I haven't bought a thing.

Gayle even sorted the extensive CD collection, it is now alphabetized – our cat Matilda can even come in and take a nap on a cushion I've provided (and she does it nightly if I'm in there). All good stuff.

A few other things:

First, there has been no indication on how FD will be run this year other than the extension of the 'home station scoring' provision of last year. As for RDXA, we have no indication on the status of Webster Park and more importantly, if club members would even consider meeting in a "group setting".

"Remote operation" has been mentioned with the possibility of running the FD site from a remote location. Granted, that would require a setup crew, approval from the county and other as yet to be determined considerations.

More on that as guidance will hopefully come from the league soon.

In closing, I'd just like to mention the passing of a few club members, Roger Burkhart, W2RMB, and Marv McIntyre, K2ZAA.

Roger was a vet and frequently participated in the St. Patrick's Day Parade. He always came over to greet me and thank the committee, class guy for sure.

Marv was a consistent contributor at FD and a yearly attendee at Dayton. We spent many hours at “S&S West” under the RDXA hospitality tent.

As we say in Gaelic, Dia duit (God be with you).

Best DX es 73

Chris, K2CS

KE2WK Award



2019 Winner – Gayle Shalvoy N2TWI

You Can Only Procrastinate For So Long

Lynn W2BSN

OK, I finally got one of those round to-its. It was time for me to install the Harbach Soft Start module into my Henry 2KD Classic linear amplifier. I bought the kit at the first Xenia Ohio (Dayton) hamfest, and I have put off installing it because of the hassle of hauling the 80 pound beast out of my rack cabinet, getting it up on the bench, and figuring how to crowd this board into the interior. I was suddenly struck by the fact that there was nothing explicitly requiring that it be installed inside the unit. That is when the idea occurred to me to install it in the outlet box that the linear was plugged into. This is a dedicated 20 ampere 220v line direct to the main breaker box. The original outlet



Original box



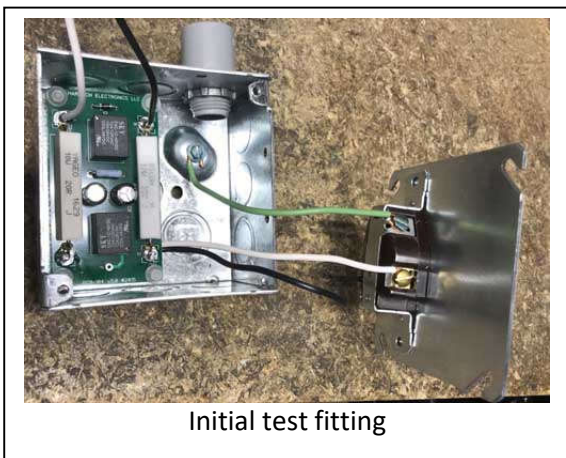
Nylon standoffs ½ inch

I went out and purchased a 4 x 4 x 2-1/4 in steel electrical box with a plain cover, and a 2 pole 20a switch and cover for the old box. A 1-3/8 inch hole saw was used for the outlet in the cover, and nylon standoffs from my junk box provided the mounting points for the Harbach pcb.

This took time to make everything fit. The depth of the box made for ample room for wire nuts and wire.

Adding the 20 amp 2 pole switch was the finishing touch.

Next amplifier I get won't need a soft start. Of course, this Henry is slated to be around for quite some time. The best part of this whole project is the fact that the heaviest thing I had to lift was the electric drill.

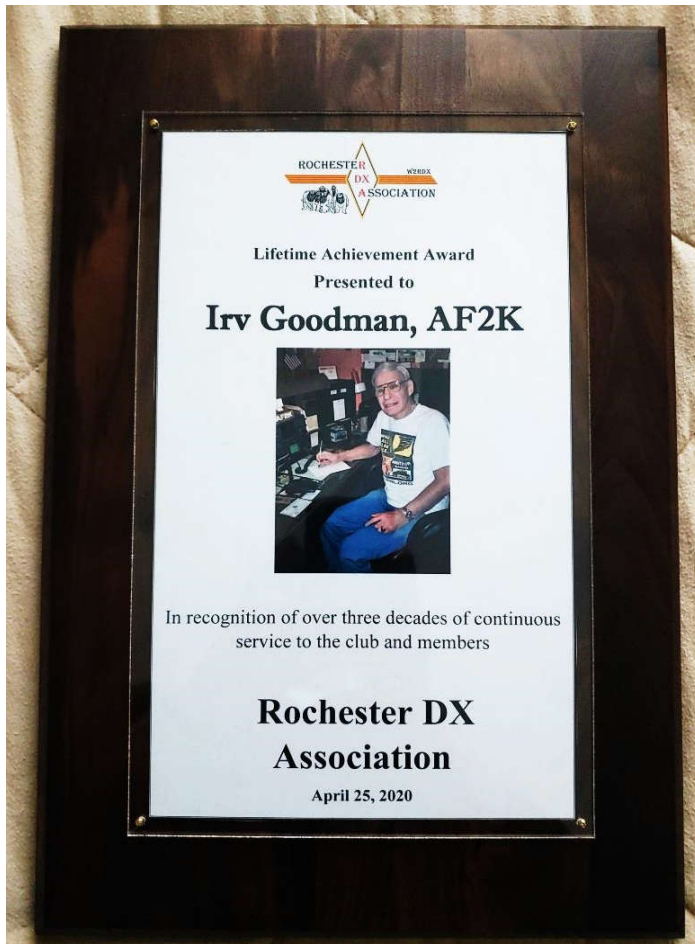


Initial test fitting

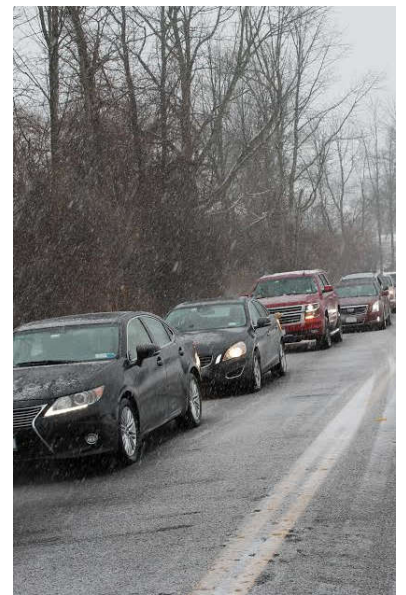


Finished product. Ready to go.

AF2K Lifetime Achievement Award



On December 20, 2020, Irv Goodman AF2K was awarded a Lifetime Achievement Award by the RDXA. Despite the snow, a long parade of cars drove slowly passed Irv's window. His friends congratulated him over their ham radios while a TV news crew recorded the scene.



Antique Wireless Association's Printed Circuit Boards

Dean NW2K

Just a quick letter to update RDXA on the latest developments created by the AWA Skunkworks. AWA is now offering a series of bare printed circuit boards (PCB) that find important uses in the shack and are fun to build. Here is the current lineup of high-quality PCBs:

1. Regulated Variable High Voltage Power Supply PCB, \$16.50

These PCBs can be used as a component to power antique radios, plate/screen/bias supplies, bipolar HV power supplies, and for general use on the bench. How about a 10v-600v variable DC supply for your next project?

2. Low Power AM Broadcast Transmitter PCB, \$20

These PCBs are selling internationally in big numbers to those that want to broadcast internet audio to vintage AM radios located throughout the house. They are in compliance with Part 15 and the transmitting range is truly spectacular at 75-100 feet. The sound quality is amazing.



3. Signal Sniffer – An AF/RF Signal Tracer PCB, \$16

These PCBs can give rise to a compact and self-contained signal tracer. Some hipsters are using them as guitar amplifiers!

4. Capacitor DC Leakage Tester PCB, \$25

Capacitors don't last forever and some experimenters desire to reform older electrolytic capacitors. In fact, the large manufacturers suggest that it may be necessary to re-form new electrolytic caps that sit on the shelf for longer than six months. Leaky caps can cause trouble and cause smoke to be released. The AWA Capacitor DC Leakage Tester PCB is a great addition to the shack and gives rise to nominal variable DC from 10v-600v.



All proceeds benefit AWA and its mission. Prices include shipping to USA addresses. For more information, check out:

<https://antiquewireless.org/homepage/purchase-pcb-items/>

Please share this information far and wide. If you have an idea to give to AWA's PCB program, please send me a note (Dean@antiquewireless.org). AWA won't be able to do everything, and your support of AWA and its mission is greatly appreciated! Happy Building!

Some Relief from Headset Fatigue

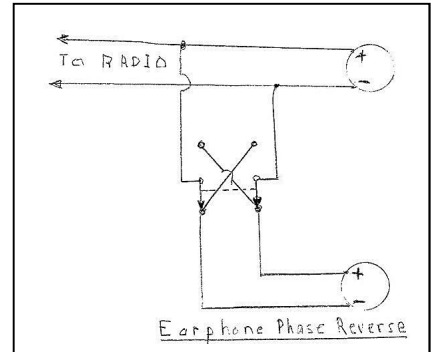
Gene W2LU

This suggestion involves providing phase reversal of one of the two earphones of your headset.

There are three basic requirements to implement this suggestion.

1. Acquiring a miniature DPDT toggle switch.
2. Having independent wiring to each earphone. Usually in one headset cup the radio cable splits to each earphone and the mike.
3. One earphone cup having room for a miniature DPDT switch and usually about a 1/4" hole in the cup to mount it.

If properly implemented, switching will result in the refreshing change of the sound as coming from each ear to coming from the center of your head.



Relics from Chris's Shack

Chris Shalvoy K2CS

As my President article mentioned, I've been cleaning my shack and here is a few nostalgic items that I've uncovered.



This is my "first" Shortwave radio, an Allied A-2508 (1970-71). I remember stocking the shelves at the local (East Rochester) Radio Shack store and the manager gave it to me... it was on the "discount" shelf.

Still have many QSL cards from SWL contacts on that radio. The radio is in perfect shape w/ the exception of a "noisy" volume control.

The other is my first "ham" radio, Heathkit HW-7. As you can see in the second photo, I calibrated it in May of 1975. Past RDXA President K2ZS, Scott Haag "borrowed" it for years and returned it once i got my license (in 1991).



I used it in the 1996 CQWW WPX CW contest and won 7 MHz QRP/p USA (with a 40m dipole from Eagle Bay, NY) even working some EU.



Sources & Methods of Contest Log Checking...

Dean NW2K

...will not be divulged! However, we'll attempt to address some questions on contest log checking that appeared recently on the RDXA reflector and we'll use NYQP to illustrate some examples.

In general, radio-communication contests are concerned with two-way QSOs and in order to have a fair contest, sponsors need a system to validate two-way QSOs fairly. Before QSOs can be validated, the sponsor must decide and define the nature of a “good” QSO. There is no hard and fast definition of a “good” QSO and the contest sponsor is free to choose their own criteria. Here is an incomplete list of QSO items that the sponsor might take into account: Time, Frequency, Mode, Exchange, Callsign. We can now discuss each of these in some detail using a few questions that the sponsor might ask as they develop their validation system.

Time

- Did the QSO occur during the contest period?
- If we have both logs for the two-way QSO, do both logs show the same QSO time?
- If different times, do both logs show the QSO occurring within our time tolerance (e.g. 60 minutes)

Frequency

- If we have both logs for the two-way QSO, do both logs show the same QSO frequency (or band)?
- Did the QSO occur out of band?
- Did the operator log the QSO within the frequency limitations of his license class?

Mode

- If we have both logs for the two-way QSO, do both logs show the same QSO mode?
- Does the log include QSOs with ineligible modes?
- Is the logged frequency consistent with the logged mode?

Exchange

- Does the log include all of the elements of the prescribed exchange?
- If we have both logs for the two-way QSO, was the correct exchange logged?
- Did the operator send a consistent exchange throughout the contest?

Callsign

- If we have both logs for the two-way QSO, was the correct callsign logged?
- If we have both logs for the two-way QSO, does each log contain both callsigns?
- Are there some callsigns that appear in only one log (i.e. a *unique*)?
- Is the callsign representative of an eligible callsign for this contest?

That was a bit tedious, but it's important to note that the definition of a “good” QSO is really up to the contest sponsor and the definitions that they set forth. For example, NYQP is rigorous and would disallow (i.e. bust) a QSO that showed something like a 60-minute discrepancy. As another example,

since most unique callsigns are actually callsign copying mistakes, NYQP takes the time to analyze QSOs containing unique callsigns. As a final example, some sponsors require the exchange to include RST; some adjudicate it and some do not. When the wiseacre sends you a 358, it would be best to log 358 instead of 599.

What happens when the sponsor doesn't have logs for both sides of a QSO? That's up to the sponsor. Some sponsors may require both logs for a valid QSO, but most don't. If you log a proper QSO and the other ham declines to send in his log, generally speaking, you will get credit for the QSO.

If you're the only one that had a QSO with a particular callsign, that callsign becomes a unique. NYQP investigates all uniques, while other sponsors may not. If a log contains a significant percentage of uniques, eyebrows get raised and the log checkers begin an investigation. For example, sometimes NYQP coincides with the autumn Stew Perry Topband Distance Challenge. A few enterprising NYQP'ers mine QSOs with the topbanders and many of those QSOs result in uniques. That explains the reason behind some NYQP logs having a lot of uniques on 160.

What happens when both logs are submitted, but the other ham busts your callsign, exchange, frequency, mode, etc? That's up to the sponsor. Generally, if you do your job right, you'll get credit for the QSO. However, if your callsign is really mangled in his log, you will likely receive a bust. In most cases, the other guy will lose the QSO.

What happens when both logs are submitted, but the other ham sends you something other than what he records in his log? You will likely lose that QSO, even if you copy what he sent. For example, the CQ WPX exchange requires a serial number. If the other chap sends you 17 by mistake, but you're 18 in his log, you pay the price and receive a bust, not him. Mistakes are part of the game!

What about dupes when both logs show both QSOs and you busted the first QSO but got the second one correct? What about dupes when you bust the first QSO and the other guy neglects to log the second QSO? There are lots of variations on this theme and some sponsors will keep good QSOs and discard busted dupes no matter where they occur in the logs. It is a good idea to log all dupes.

So far, we've discussed the principled hunt for QSO matches and mistakes in an attempt to create a fair contest where virtue is rewarded. There is another side of contest log checking and it concerns cheating. Currently, while possible and increasingly practical, it's tough to "prosecute" cheats that claim low power while using a SB-220 to drive the final PA. There are also established statistical tools and internet tools that can catch those that claim non-assisted while using assistance. Correlations show up in the noise. Fortunately, the overwhelming majority of hams realize that the prize money is not large enough to be an incentive to cheating.

We've discussed the adjudication of QSOs and not scoring since scoring is generally a trivial deterministic calculation based on valid QSOs. That computation of score may or may not include additional penalties for mistakes. That is, if you bust a QSO, you will lose that QSO and you might also lose additional points, which are equivalent to additional lost QSOs.

While it's always a good idea to minimize the number of mistakes, depending on the nature of the contest rules and penalties, it might make sense to guess as you're digging out that weak one. If there is no additional penalty, what do you have to lose but the QSO? Use caution...that guy might come up in strength in the next hour when you can put him into the log with confidence.

In summary, the definition of a "good" QSO varies and you will likely never learn all of the details surrounding contest log checking. It's best to copy what the other guy sends. Log all dupes. Don't

worry, mistakes are part of the game, but don't make them a big part. Don't use assistance when you're unassisted. And if you're claiming QRP, disconnect the 5V/10A filament supply and 4KV/1A plate supply from the antenna tuner!

NanoVNA Accessory

Frank Pollino K2OS

Having purchased a NanoVNA a few months ago, I have found it to be a useful tool on my workbench. However, I was concerned about the numerous mating cycles that would be required with the SMA connectors. Also, it seemed that I was placing stresses on the connectors that would eventually affect their attachment to the internal PC board. I decided to fabricate an accessory mounting plate that would address these concerns.

My solution was to fabricate a holder for the NanoVNA with interface cables that would connect to the device to be tested. The holder consists of a 1/8" aluminum plate, an L-shaped bracket to hold type N connectors, two cables with a type N female bulkhead connector on one end and an SMA male connector on the other end and some Velcro.

I mounted the type N bulkhead connectors to the L-shaped bracket and attached the bracket to one end of the plate. After attaching the SMA male connectors to the NanoVNA, I applied some Velcro fasteners to the bottom of the NanoVNA case and the mounting plate. I added some rubber feet to the bottom corners of the mounting plate.

For calibration purposes, I made an "open" and "short" using type N male connectors. Add a 50 ohm type N load and a cable with type N male connectors on each end and you are ready to use the NanoVNA without concern of wearing out its SMA female connectors.



4NEC2, NEC2 and the AC Skin Effect

John H. “Jack” Kelly, WA2CHV¹

There appears to be a substantial amount of confusion on the Internet concerning the treatment of the AC skin effect in the antenna-modeling package, 4NEC2². Specifically, 4NEC2 and its underlying engine, NEC2³, are variously reported as properly accounting for the skin effect and as ignoring it. Do they or do they not account for the skin effect?

The AC skin effect^{4,5} is the result of induced eddy currents in a conductor that concentrate the AC current near the surface of the conductor. This concentration is a function of the AC frequency f , the conductor conductivity σ , and the conductor’s magnetic permeability μ , and the conductor’s geometry. This effect can concentrate the current into a “skin” depth of a few tens of microns in a conductor near its surface at amateur HF frequencies for example, in a #12-gauge solid copper wire. The result of importance for Amateur Radio is that I^2R losses increase. There exist many on-line calculators for easily determining the skin depth of a conductor of a given material at a given frequency.

How can 4NEC2/NEC2’s treatment of the skin effect be verified? NEC2 reports⁶ the power lost to I^2R as the quantity “Structure loss”. This number can be compared to a manual calculation of the expected I^2R loss for a simple antenna structure with and without skin effect. A simple antenna structure that is easily analyzed is the 80-meter wire dipole model supplied with the 4NEC2 package called “36dip.nec”. This is a 3.68 MHz resonant horizontal dipole, 39.293 meters full length, made of 1 mm radius (approximately #12-gauge) copper wire with a voltage source at the center. The model loads the copper wire with the standard copper conductivity, σ , of 5.8×10^7 siemens/meter or, equivalently, 5.8×10^7 1/(Ω -meter). The results of NEC2 and a manual calculation of the I^2R loss are shown in the table below:

<i>36dip I²R Loss (% of input)</i>	<i>With Skin Effect</i>	<i>No Skin Effect</i>
Manual Calculation	1.96%	0.13%
NEC2 Prediction	1.93%	

¹ Please direct questions, comments, criticisms, and corrections to WA2CHV at ARRL dot net

² Downloadable from: <https://www.qsl.net/4nec2/>

³ Burke, G.J., and A.J. Poggio. 1981 January. Numerical Electromagnetics Code (NEC)—Method of Moments, Lawrence Livermore National Laboratory, Livermore, California, Technical Document, Rep. UCID-18834.

⁴ A highly rigorous approach to the skin effect is given by W. R. Smyth, *Static and Dynamic Electricity*, Third edition, Revised, Hemisphere Publishing, New York, 1989, pp. 371-374.

⁵ A more approachable explanation of the skin effect specifically geared for Amateur Radio enthusiasts is in the article “Conductors for HF Antennas”, by R. Severns, QEX Nov/Dec (2000). Also available at: https://rudys.typepad.com/ant/files/antenna_wire_conductor.pdf

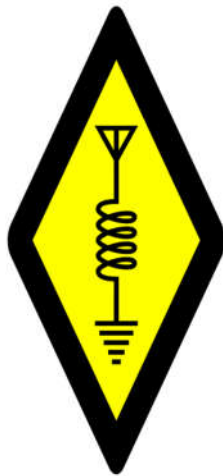
⁶ Be sure to use the “Structure Loss” number reported by NEC2 in the “36dip.out” file and NOT the “Structure Loss” number reported in the “Main” window of 4NEC2 which is normalized to 100 watts input power.

The loss values 1.96% and 1.93% are equal within the numerical accuracy of the model/code. It is abundantly clear that for the “Wire” geometry, NEC2 and therefore 4NEC2 or any other antenna-modeling package using the NEC2 engine *account for the AC skin effect*. The manual calculation is a calculation of the skin depth followed by a simple integral over the length of the wire. A detailed write-up of the calculation is available upon request.

There are a few caveats with regard to AC skin effect in modeling using 4NEC2/NEC2. NEC2 only does a simple uniform-cross-section skin-depth calculation so modeling of a composite structure like, for example, silver-plated copper wire is not possible. Furthermore NEC2 only inputs the conductivity, σ , in calculating the AC skin effect. There is no corresponding place on the “LD” card to input the magnetic permeability μ . In effect, 4NEC2/NEC2 always assumes the conductor’s magnetic permeability is that of free space so modeling of magnetic materials like steel wire or magnetic stainless steel wire is not possible. Similarly, skin-effect loss modeling of antennas constructed with the popular Copperweld® antenna wire which is both a composite structure and a magnetic material can only be approximated. When modeling Copperweld® antenna wire with 4NEC2 the reference by Severns is very useful.

In summary:

- The antenna modeling package 4NEC2/NEC2 properly accounts for the AC skin effect in the “Wire” geometry. No check of the “Patch” geometry was made.
- The antenna modeling package 4NEC2/NEC2 cannot properly model composite and/or magnetic antenna materials with regard to skin effect.
- I^2R loss modeling of antennas constructed with the popular Copperweld® antenna wire can only be approximated. See the reference by Severns.



PRO TIP - a little 1-2" x 1-2" x 12" piece of wood under each side of your radio provides a space to slide your keyboard when not in use. – Gene W2LU

RDXA 2020-21 Calendar

September 2020

1 — BOD — K2CS (MacGregor's)
 10-12 — **ARRL September VHF**
 15 — Meeting — Zoom — Show shack
 26-27 — **CQWW RTTY**

October 2020

6 — BOD — K2TER
 20 — Meeting — Zoom — DX Eng
 17-18 — **NYQP**
 24-25 — **CQWW SSB**

November 2020

4 — BOD — ~~WED~~ — K2DH
 7-9 — **ARRL SS CW**
 16-18 — **ARRL SS SSB**
 17 — Meeting — Zoom — TBA
 21-23 — **CQWW CW**
 30 — **BULLETIN DEADLINE**

December 2020

2 — BOD — ~~WED~~ — Zoom — FD
 4-6 — **ARRL 160m CW**
 12-13 — **ARRL 10m**
 26-27 — **Stew Perry 160m CW**

January 2020

2-3 — **ARRL RTTY Roundup**
 5 — BOD
 16-18 — **ARRL January VHF**
 19 — Meeting — Zoom
 29-31 — **CQWW 160m CW**



February 2021

2 — BOD
 13-14 — **CQWW WPX RTTY**
 20-21 — **ARRL DX CW**
 16 — Meeting — Zoom
 25-28 — **CQWW 160m SSB**
 28 — **BULLETIN DEADLINE**

March 2021

2 — BOD
 6-7 — **ARRL DX SSB**
 16 — Meeting - Zoom
 27-28 — **CQWW WPX SSB**

April 2021

6 — BOD
 20 — Meeting - Zoom
 ?? — Combined Awards Banquet ??

May 2021

4 — BOD
 18 — Meeting - Zoom
 21-23 — Dayton Hamvention ??
 29-30 — **CQWW WPX CW**
 31 — **BULLETIN DEADLINE**

June 2021

1 — BOD
 ?? — Rochester Hamfest ??
 15 — Meeting - Zoom
 17-18 — **ARRL June VHF**
 26-27 — **ARRL Field Day ??**

July 2021

10-11 — IARU
 18-19 — **CQWW VHF**

August 2021

?? — ROC City Hamfest ??
 31 — Contest season concludes
 Membership year concludes
 31 — **BULLETIN DEADLINE**

Rochester DX Association

Club Station — W2RDX

Club Website —<http://www.rdxa.com>

Facebook group —RDXA QTH

This Bulletin is the official publication of the Rochester DX Association and is published Quarterly.

All those with an interest in amateur radio, DXing and contesting are cordially invited to any meeting and to join RDXA.

Meetings are held at 19:30 L... 3rd
Tuesday... June.
M...
En...
Sc...

**IN-PERSON MEETINGS ARE CANCELLED
DUE TO THE PANDEMIC.
See Calendar and first page for online
meeting schedule.**

President.....Chris Shalvoy – K2CS
president@rdxa.com

Vice-President.....Mark Hazel — K2MTH
vicepresident@rdxa.com

Treasurer ..Mike Sanchez –KM2B
treasurer@rdxa.com

Secretary.....Bill Rogers – K2TER
secretary@rdxa.com

Please send all newsletter submissions, comments, and complaints to the editor:

John Hall AC2RL -- newsletter@rdxa.com



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Mark Hazel – K2MTH
Bill Rogers-K2TER
Mike Sanchez – KM2B
Lynn Bisha – W2BSN
Dave Hallidy - K2DH
Doug Stewart-N2BEG
Don Dever – KD2CTZ

Appointed Positions

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Media Coordinator	Paul Kolacki-K2FX
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	Gene Fuller – W2LU

Membership Dues can be sent via:

Paypal: treasurer@rdxa.com

US Mail: Mike Sanchez KM2B
8 Piccadilly Square
Rochester, NY 14625

Regular Membership: \$25.00

Family, Full time Student or Out of State member:
\$6.25



Build a 23 cm Yagi That Doubles As a Fish De-Boner

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QRM



ARGH The national association for
GREASY HAMS

January 2021 www.arghorg.pdq

DEVOTED ENTIRELY TO ELECTRIC SHOCKS



Boat Anchor Mobile

QRM Reviews

**Wind-Powered Solder
Stations**

**MFJ-6789532A MicPi
Microphone Clip**

**Power-Krust Leenya
"10 meter" Amplifier**

**Rocket Surgery
QRO All-Band H-T**

Submitted by Doug N2BEG, created by Bob Dunn K5IQ – used with permission